

BCS TECHNOLOGIES - DSP 1000

PART I – SECTION C (DTFA01-00-R-FSSVS)

DESCRIPTION / SPECIFICATIONS / WORK STATEMENT

APPENDIX B – AUTOMATIC CALL DIRECTOR (ACD)

CSTA Interface Guide

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1 General

1.1 Overview

The eQueue 4000/eNterprise 2000 have full software support enabling it as a CTI switch server. This document describes how the eQueue/eNterprise CTI capabilities are implemented.

1.2 Open Standards and API's

The basis for most CTI standards development work is ECMA's CSTA (Computer Supported Telecommunications Applications). ECMA (the European Computer Manufactures Association) developed these standards around 1990, since then many others have build upon this work. The Versit standards further refine the specification, and extensions.

The eQueue/eNterprise implements its CSTA link in accordance with ECMA 179 and 180 standards, with some optional Versit extensions

The ECMA standards are written within the ISO OSI model. In particular, the ASN1, ROSE and ACSE standards are used to describe how CSTA messages are transported between the application and the switch.

- ASN1 (Abstract Syntax Notation One) is a formal way of describing data structures in a machine and system independent format.
- ACSE (Application Control Service Element) is a protocol for opening connections ("sessions") between an application and a server.
- ROSE (Remote Operations Service Element) is a syntax for applications to

Versit is an extension clarification of the orriginal CSTA standard. It is the goal of eOn Communications to aim towards compliance with the Versit standards when appropriate. Certain Versit extensions are implemented as options.

Novel TSAPI is not a standard, but an API. In the TSAPI model, a switch is connected to a TSAPI server which networks to TSAPI clients. TSAPI makes no recommendations as to the link between switch and server, the switch manufacturer provides a driver for the server side that connects to the switch.

1.3 eOn CSTA Link

The eQueue/eNterprise implements CTI based on CSTA phase 1 standards. Future upgrade to CSTA phase 2 or Versit standards is planned.

Two transport options exist for the CSTA application, both using TCP/IP over a 10BaseT Ethernet as the physical layer.

- The standard link uses the CSTA recommended ASN1 data encoding. This is the most conferment and transportable version.
- An optional Novel TSAPI style encoding exists for a simpler, but less transportable, protocol. In this transport protocol, messages are binary images of Novel's TSAPI header structures.

Up two 8 (4 standard and 4 Novel TSAPI style) concurrent applications may be connected to the eQueue/eNterprise

1.4 References

ECMA-179	Services for Computer Supported Telecommunications Applications (CSTA) (1992)
ECMA-180	Protocol for Computer Supported Telecommunications Applications (CSTA) (1992)
ECMA-217	Services for Computer Supported Telecommunications Applications (CSTA) Phase II (1994)
ECMA-218	Protocol for Computer Supported Telecommunications Applications (CSTA) Phase II (1994)
ITU Rec. X.217	ISO 8549 Information processing systems - Open Systems Interconnection - Service definition for the Association Control Service Element
ITU Rec. X.227	ISO 8650 Information processing systems - Open Systems Interconnection - Protocol specification for the Association Control Service Element
ITU Rec. X.208	ISO 8824 Information technology - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)
ITU Rec. X.209	ISO 8825 Information technology - Open Systems Interconnection - Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1)
ITU Rec. X.219 operations - Part	ISO 9072-1 Information processing systems - Text communication - Remote 1 Model, notation and service definition
ITU Rec. X.229	ISO 9072-2 Information processing systems - Text communication - Remote operations - Part 2:Protocol specification

2 Standard CSTA link - ASN1 Encoded

2.1 Overview

CSTA specifies the messages passed between a switch server and a client, but the lower layers of the protocol are an implementation option. The recommended approach is to use ASN1 encoding of the ROSE operations that contain the CSTA messages. This is the approach taken by the eQueue/eNterprise standard CSTA link.

2.2 TCP/IP Physical Link

The ASN1 encoded CSTA link uses TCP/IP over a 10BaseT Ethernet as the physical transport layer. The application side initiates communications by opening a TCP/IP connection. The IP port is 2555 by default, but may be reconfigured as required.

2.2 Messages Length Prefix

All data sent and received is prefixed by a 2 byte length field. The length does not include the length field itself, and is sent most significant byte first. For example, an ACSE abort message is -

00 05 64 03 80 01 00

In the example, 00 05 is the number of octets (bytes) in the remaining message.

2.3 ASN1 Encoding Details

ASN1 allows data protocol units to be encoded in an infinite variety of equivalent forms.

Messages sent from an application to the eQueue/eNterprise may be coded in any syntactically valid form subject to the following constraints :

- The number of octets in the long form of a length specified shall not exceed 4.
- The total size of an object shall not exceed 1024
- The total number of items in a message shall not exceed 200
- The maximum size of an integer is 4 octets
- Real numbers are not supported

Message sent from the eQueue/eNterprise to the application abide by the following rules :

- The total message size will not exceed 512 bytes
- Lengths are encoded either in short form, or a two octet long form.
- The maximum size of an integer is 4 bytes
- Real numbers are not used
- Strings of all forms are sent in primitive form.

2.3 ACSE - Session Association

ACSE is an ISO protocol (see ISO 8649 and 8650) which is used by application clients to establish sessions to a server. The CSTA protocol includes the use of ACSE negotiation procedures. When an application opens a session to the DSP server, it can exchange ACSE messages to set protocol options that are to be used.

The present version of the DSP 1000 CSTA link makes little use of ACSE negotiations. ACSE requests received by the eQueue/eNterprise will be responded to appropriately, but no use is made of parameters within the messages. The eQueue/eNterprise does not require an application to use the ACSE start-up and shutdown process.

The ACSE start-up procedure is for the application to send an Associate Request, the switch then replies with a Associate Response. The shutdown procedure is for the application to send a Release Request, and the switch responds with a Release Response.

2.4 ROSE - Remote Operations

ROSE is an ISO protocol (see ISO 9072) which defines how distributed applications may interact through a remote operations model. All CSTA messages sent (except for the initial and final ACSE exchanges) are bundled in the ROSE protocol.

To request a service, an invoker sends a ROSE INVOKE message to a performer. The performer side responds with either a ROSE RESPONSE, a ROSE ERROR, a ROSE REJECT or no reply at all. Along with application data, these messages have an invoke ID which allows the response to be matched to the invoke (for asynchronous operation). This protocol is symmetric.

Most CSTA message transfers are of one of two forms :

- SERVICE REQUESTS from the application side are ROSE invoke operations that the switch performs and replies to with an appropriate result or error.
- EVENTS from the switch side are ROSE invoke operations from the switch that require no response.

2.5 Sample Encoding

Following are some sample binary encodings of messages over the eQueue/eNterprise CSTA link.

Application issues a MakeCall service from device 4201, calling device 7654, with rose invoke ID 0x1234.

00 19	len=0x19
A1 17	Rose Invoke Operation tag, len=0x17
02 02	invoke ID tag, len=0x2
12 34	ID = 0x1234
02 01	Operation Value tag, len=0x1
0A	Operation value = 0xA (makeCall)
30 0E	MakeCall Arguments tag, len=0xE
80 04	callingDevice tag, len=0x4
34 32 30 31	calling device = "4201"
62 06	calledDevice tag, len=0x6
80 04	deviceIdentifier tag, len=0x4
37 36 35 34	called device = "7654"

Switch replies to this message with a MakeCall result message, the connection ID is the newly created call ID of 0x0001 with the device ID of the caller (4201).

00 19	len = 0x19
A2 17	Rose Result message tag, len=0x17
02 02	invokeID tag, len=0x2
12 34	invoke ID = 0x1234
30 13	sequence tag, len=13
02 01	operation tag, len=0x1
0A	operation = 0xA (makeCall)
6B 0C	initiatedCall tag, len=0xC
82 04	call tag, len=0x4
00 00 00 01	call id = 0x0001
80 04	device tag, len=0x4
34 32 30 31	calling device = 4201

3 Novel TSAPI Encoding

3.1 Overview

The Novel TSAPI encoding does away with ASN1 encoding, instead using a fixed header structure for messages between systems. This creates less transportability, but can make for simpler application coding. This link may be used directly by an application, or by a Novel TSAPI server via the eOn switch driver NLM.

3.2 TCP/IP Physical Link

The Novel TSAPI style link uses TCP/IP over a 10BaseT Ethernet as the physical transport layer. The application side initiates communications by opening a TCP/IP connection. The port used is 4206 by default, but may be reconfigured as required.

3.2 Messages

All messages sent and received are in the form of a TDIDriverControlBlock_t (TCB for short) followed by message data followed by private data. The TCB has fields specifying message offset / length and private offset / length. A complete message is of the form :

TCB + Message Data + Private Data

For example, a message with 10 bytes of message data and 7 byte of private data would have

```
TCB.messageOffset = sizeof(TCB)
TCB.messageLength = 10
TCB.privateOffset = sizeof(TCB)+10
TCB.privateLength = 7
total message length = sizeof(TCB)+10+7
```

Both TCB and message data is a binary image of the Novel TSAPI headers, compiled on an x86 with byte packing and variable size enumerated types (the last can be a stickler, if an application compiler does not support variable size enums, one must hack the headers by changing enums to the correct size ints and #defining the values).

3.3 Novel TSAPI integration

The eQueue/eNterprise can be connected to a Novel TSAPI server through the eOnswitch driver NLM.

4 Application Layer Implantation Details

4.1 Device Identifiers

Device identifiers use the dialingNumber representation , never deviceNumber.

- Phones The value of the device identifier is the dialable directory number of the phone.
- Agents The device ID is the directory number. The agent ID is the port number that the agent has logged in on.
- Trunks A trunk ID can consist of either the trunk number, the ANI or the DNIS. Trunk number is used by the switch only when the ANI or DNIS is not known.
- Groups The group string is a configured digit prefix string followed the group number. The prefix string is arbitrary, but should be chosen to avoid conflicts with other devices.

For standard ASN1 encoded links only, the IBM device type extensions may be used. This creates separate tags for:

- | | | |
|---------------------|--------|--------------------------------------|
| • IBMacdNumber | TAG=12 | The device is a group number |
| • IBMinternalNumber | TAG=13 | The device is an internal ACD agent |
| • IBMtrunkDigits | TAG=14 | The device is ANI or DNIS on a trunk |
| • IBMtrunkId | TAG=15 | The device is a trunk number |

If the IBM extensions are used, the group prefix is not used (its purpose was to differentiate groups from devices).

Dynamic device identifiers are not used.

4.2 Monitors

The eQueue/eNterprise CSTA system supports monitors by device, monitors by call and monitors by call by device. The maximum number of monitors supported is a configuration option. Groups of devices may be monitored by specifying a group device.

4.3 Call ID's and Monitor CrossRef ID's

The eQueue/eNterprise generates both call IDs and monitor cross reference IDs as 4 byte octet strings that are binary images of numbers 1 - n (where n is separately configurable for both types). The 4 byte length is likely to be changed to 2 bytes in a later version.

When two calls are conference by any mechanism, the resulting call ID is one of the two original IDs, but no assumption can be made as to which call ID lives.

5 Supported Switching Service Requests

5.1 General

Switching service requests are issued by the application to the eQueue/eNterprise to request call processing actions. All service requests are responded to with a success or fail response, some responses contain additional information. Note that service requests may also cause events to be generated, these may come before or after the response, applications should not make assumptions as to this order.

The fields listed below are critical for correct operation of the link. Other fields that are supported (see the PICS) are interpreted and used as bet may be. No supported fields are ignored.

In the following sections, C[n] is a call ID, D[n] is a device ID and C[n]|D[n] is a connection ID.

5.2 Alternate Call

Device D has an active call C1 and a held/delivered call C2, causes the active call to be placed on hold, the held/delivered call to be reconnected.

- activeCall C1|D (D is device doing the swap)
- heldCall C2|D (D is device doing swap if not specified above)

5.3 Answer Call

Call C has been delivered to device D , causes call to be answered.

- callToBeAnswered C|D (D is device answering call)

5.4 Call Completion

Call C has been delivered to device D, causes a campon, barge-in or callback.

- featureInfo action (campon , barge or call-back)
- featureInfo.connectionID C|D (D is device being called)

5.5 Clear Call

Device D is in call C, causes all parties to be dropped..

- ConnectionID C|D (D is any device in the call)

5.6 Clear Connection

Device D is in call C, causes device D to drop (other parties are processed as per standard DSP call processing)

- ConnectionID C|D (D is device to drop from call)

5.7 Conference Call

Device D has active call C1 and held call C2, causes a conference to be made.

- activeCall C1|D (D is device performing conference)
- heldCall C2|D (D is device performing the conference [if not specified above])

Result returns a connection list of the new conference call CX (either C1 or C2 , whichever “lives”).

5.8 Consultation Call

Device D has an active call C1, causes C1 to be placed on hold and new call C2 to be originated by D

- activeCall C1|D (device performing the consultation call)
- calledDirectoryNumber phone number to make new call to

Result returns new call connectionID C2|D.

5.9 Divert Call

This is three distinct choices.

If the divert tag is 0, its a call deflect (redirect). Device D has a delivered call C, call is diverted to specified new destination number.

- divertInfo.CallToBeDiverted C|D (D is device being called)
- divertInfo.NewDestination phone number to send the call to

If the divertInfo tag is 1 (pickup), the call is being pickup up by a phone other than the original destination Device D has a delivered call C, call is picked up by requesting device.

- divertInfo.CallToBePickedUp C|D (D is device to pick up off)
- divertInfo.requestingDevice device performing the pickup

If the divertInfo tag is 2 (group), a group pickup is being requested. No call is specified, the requesting device performs a group call pickup on a call chosen by the switch.

- divertInfo.DeviceID device performing group pickup

5.10 Hold Call

Device D is on an active call C, causes the call to be put on hold.

- callToBeHeld C|D (D is device placing a call on hold)

5.11 Make Call

Device D places a new call C.

- callingDevice Device making the call
- calledDevice phone number to call

Result returns the connection ID of C (the new call).

5.12 Query Device

Requests information on a device.

- device Device to return information on
- feature Type of information desired

Result returns the requested information.

5.13 Reconnect Call

Device D has an active call C1 and a held call C2, causes C1 to be cleared and C2 to be reconnected.

- activeCall C1|D (D is device performing reconnect)
- heldCall C2|D (D is device performing reconnect[if not specified above])

5.14 Retrieve Call

Device D has a held call C, causes C to be reconnected.

- callToBeRetrieved C|D (D is the device performing the retrieve)

5.15 Set Feature

A feature is set on a device.

5.26 Transfer Call

Device D has an active call C1 and a held call C2, causes C1 to be extended to C2 (D is dropped from connection).

- activeCall C1|D (device performing the transfer)
- heldCall C2|D (device performing the transfer [if not specified by activeCall])

Result returns a connection list of the CX (the extended call, either C1 or C2 is the ID)

6 Call Events

6.1 General

Call events are sent by the switch to the application when call processing occurs to a monitored device or call. Monitors are set up by Status Reporting Services (see chapter 9). All call events contain the elements :

- crossRefIdentifier
- eventTypeID
- eventCause
- localConnectionInfo

Other fields are sent as described below.

6.2 Call Cleared

Sent when the last party of a connection has dropped.

- clearedCall released call ID | no device ID

6.3 Conference

Sent when two calls are conference together.

- `primaryOldCall` call ID on hold | conference controller
- `secondaryOldCall` active call ID | conference controller
- `confControlled` The device that initiated the conference
- `addedParty` The device that was active
- `conferenceConnections` A list of all parties after the conference

6.4 Connection Cleared

Sent when any party drops from a connection. This include the last party, so a full hang-up could consist of a connection cleared by each device, followed by a call clear.

- droppedConnection released call ID | releasing device
- releasingDevice The device that released

6.5 Delivered

Sent whenever a device is seized for delivering a call, such as when a phone is rung. This also includes the case situation when a trunk is seized by ARS for making an outbound call.

- connection call ID being delivered | alerting device
- alertingDevice The alerting device
- callingDevice The device that originated the call (ANI if possible)
- calledDevice The originally called device
- lastRedirectionDevice The device that was previously being alerted

6.6 Diverted

Sent when a call that was previously delivered to one device is redirected to another device.

- connection call ID being diverted | diverted from device
- divertingDevice The device that the call was diverted from
- newDestinationDevice The new destination device

6.7 Established

Sent when a device answers a call.

- establishedConnection call ID being answered | answering device
- answeringDevice The device that is answering the call
- callingDevice The device that originated the call (ANI if possible)
- calledDevice The DNIS that was originally called
- lastRedirectionDevice If we know where the call came from, this is it

6.8 Failed

Sent when a call has failed with no place to go. Generally this is when the DSP is playing howl, busy, etc. to a phone or trunk.

- failedConnection call ID that failed | device is calling device
- failingDevice The device that made the failing call
- calledDevice The DNIS number originally called

6.9 Held

Sent when a call is placed on hold.

- heldConnection call ID being held | device placing call on hold
- holdingDevice The device placing the call on hold

6.10 Network Reached

Sent when a dialling rule has completed sending an outbound call on a trunk.

- connection call ID making trunk call | the trunk
- trunkUsed The trunk that was picked
- calledDevice The DNIS that was dialled out

6.11 Originated

Sent when a device has originated a “real” call. This does not include most feature access codes. Some feature access codes (such as ARS processing) start a real call and therefore generate an originated event.

- originatingConnection call ID being originated | originating device
- callingDevice The device that originated the call (ANI if possible)
- calledDevice The DNIS that is being called

6.12 Queued

Sent when a call is offered to a primary ACD gate. Overflow gates do not generate events

- `queuedConnection` call ID being queued | device is calling device)
- `queue` The ACD gate queued on
- `callingDevice` The device that is calling (ANI if possible)
- `calledDevice` The original dialled DNIS
- `lastRedirectionDevice` The pilot number of the inbound route

6.13 Retrieved

Sent when a call is retrieved from hold.

- `retrievedConnection` call ID being retrieved | device that unheld the call
- `retrievingDevice` The device that performed the unhold

6.14 Service Initiated

Sent when a device goes off-hook and receives dialtone.

- `initiatedConnection` call ID being initiated | device that initiated call

6.15 Transferred

This is rarely sent, the only case being when the system is performing a CSTA commanded transfer.

- `primaryOldCall` call ID that was on hold | device performing the transfer
- `econdaryOldCall` active call ID | device performing the transfer
- `transferringDevice` The device performing the transfer
- `transferredDevice` The device that was active
- `transferredConnections` A list of all parties after the transfer

7 Feature Events

7.1 General

Feature events are sent by the switch to the application when a monitored device enables

- eventTypeID
- eventCause
- localConnectionInfo

7.2 Call Information

Sent by the switch to indicate entry of a work unit or account code.

- connection The call being in progress when the work unit was entered
- device The device that entered the work unit
- accountInfo The work unit

7.3 Do not Disturb

Sent whenever a phone enters or leaves DND state

- device The device that entered/left DND
- doNotDisturbON True if device is now in DND

7.4 Forwarding

Sent when a phone changes its forwarding state. This is NOT sent when the phone is reprogrammed by the database administrator.

- device The device that changed its forwards
- forwardingInfo The forwards now active

7.5 Message Waiting

Sent when a message waiting indication is turned on/off on a phone.

- deviceForMessage The device that had message waiting turned on/off
- ivokingDevice The device that turned message waiting on/off
- messageWaitingON True if device is now has a message

8 Agent Events

8.1 General

Agent events are sent by the switch when a monitored agent changes its ACD state.

- eventTypeID
- eventCause
- localConnectionInfo

8.2 Logged On

Sent when an agent logs in to the ACD.

- agentDevice The agents device (the dialable agent number)
- agentID The port the agent has logged in on.
- agentGroup The ACD group of the agent

8.3 Logged Off

Sent when an agent logs off.

- agentDevice The agents device (the dialable agent number)
- agentID The port the agent has logged in on.
- agentGroup The ACD group of the agent

8.4 Not Ready

Sent when an agent goes into some mode other than those specified below.

- agentDevice The agents device (the dialable agent number)

8.5 Ready

Sent when an agent goes AVAIL or PRIMARY AVAIL (is available for an ACD call).

- agentDevice The agents device (the dialable agent number)

8.6 Work Not Ready

Sent when an agent goes AFTER CALL WORK.

- agentDevice The agents device (the dialable agent number)

8.7 Work Ready

Sent when an agent goes into GATE mode (is on an ACD call).

- agentDevice The agents device (the dialable agent number)

9 Status Reporting Services

9.1 General

Status reporting services to establish monitors and obtain device/call “snapshots”. Monitors are established by the application to indicate that certain call events require event notifications to be sent to the applications.

Monitors are generally set up on a device (phone, agent , trunk or group). The monitorType may be call, in which case any call that “hits” the device is monitored till completion, even if the monitoring device has dropped out.

Monitors may also be set by a connection ID, this will only monitor the specified call.

Monitor filters may be set to request that only the specified subset of events be indicated.

9.2 Monitor Start

Sent by the application to request a monitor be initiated.

- monitorObject The device or call to be monitored
- monitorType If monitor is on a call basis
- monitorFilter Mask of events to be monitored

The DSP will return a result including -

- monitorRefIdentifier A unique identifier to be included in all events based on this monitor
- monitorFilter Mask of events to be monitored

9.3 Monitor Stop

Sent by the application to request a monitor be initiated.

- monitorRefIdentifier A unique identifier to be included in all events based on this monitor

This message may also be sent by the DSP to indicate that a monitor on a connection ID has been dropped.

9.4 Change Monitor Filter

Sent by the application to request a change in a monitor filter mask

- monitorObject The device or call to be monitored
- monitorFilter Mask of events to be monitored

The DSP will return a result including -

- monitorFilter Mask of events to be monitored

9.5 Snapshot Device

Sent by the application to request information on a device

- snapshotObject The device to get a snapshot of

The DSP returns a list of all related calls in the result.

9.6 Snapshot Call

Sent by the application to request information on a call

- snapshotObject The call to get a snapshot of

The DSP returns a list of all related calls in the result.

10 Call Flow Examples

10.1 Direct Inbound Call

Trunk 1234 from ANI 4232200 calls in via DNIS 7555 and is sent to station 555. Call ID is 0001.

ServiceInitiated	InitiatedConnection	= 0001 1234	Trunk 1234 goes off-hook
Originated	OriginatedConnection CallingDevice CalledDevice	= 0001 1234 = 4232200 = 7555	ANI/DNIS received
Delivered	AlertingConnection AlertingDevice CallingDevice CalledDevice LastRedirection	= 0001 555 = 555 = 4232200 = 7555 =	Station 555 is rung
Established	EstablishedConnection AnsweringDevice CallingDevice CalledDevice LastRedirection	= 0001 555 = 555 = 4232200 = 7555 =	Station 555 answers

10.2 Inbound Call with Ring-No Answer Forward

Trunk 1234 from ANI 4232200 calls in via DNIS 7555 and is sent to station 555. Call ID is 0001. After 555 ring times out, the call forwards to 666.

ServiceInitiated	InitiatedConnection	= 0001 1234	Trunk 1234 goes off-hook
Originated	OriginatedConnection CallingDevice CalledDevice	= 0001 1234 = 4232200 = 7555	ANI/DNIS received
Delivered	AlertingConnection AlertingDevice	= 0001 555 = 555	Station 555 is rung

	CallingDevice	= 4232200	
	CalledDevice	= 7555	
	LastRedirection	=	
Diverteded	DivertingConnection	= 0001 555	call forwards from 555 to 666
	DivertingDevice	= 555	
	NewDestination	= 666	
Delivered	AlertingConnection	= 0001 666	Station 666 is rung
	AlertingDevice	= 666	
	CallingDevice	= 4232200	
	CalledDevice	= 7555	
	LastRedirection	= 555	
Established	EstablishedConnection	= 0001 666	Station 666 answers
	AnsweringDevice	= 666	
	CallingDevice	= 4232200	
	CalledDevice	= 7555	
	LastRedirection	=	

10.3 Outbound Call

Station 555 dials 9+486-3300. Trunk 1234 is used to dial out on.

ServiceInitiated	InitiatedConnection	= 0001 555	Station 555 goes off-hook.
Originated	OriginatedConnection	= 0001 555	Station dials number
	CallingDevice	= 555	
	CalledDevice	= 4863300	
NetworkReached	Connection	= 0001 1234	Dialling rule releases call to network
	TrunkUsed	= 1234	
	CalledDevice	= 4863300	
Delivered	AlertingConnection	= 0001 1234	Trunk 1234 is seized
	AlertingDevice	= 4863300	
	CallingDevice	= 555	
	CalledDevice	= 4863300	
	LastRedirection	=	
Established	EstablishedConnection	= 0001 1234	Station 555 Answers
	AnsweringDevice	= 4863300	
	CallingDevice	= 555	
	CalledDevice	= 4863300	
	LastRedirection	=	

10.4 Inbound Call to ACD Gate

Trunk 1234 from ANI 4232200 places call to DNIS 600. Inbound route queues on gate 4 via inbound route pilot 800, it is the 7th call in queue. Agent 33 (off hook available) is beeped and given the call.

ServiceInitiated	InitiatedConnection	= 0001 1234	Trunk 1234 goes off-hook
Originated	OriginatedConnection CallingDevice CalledDevice	= 0001 1234 = 4232200 = 600	ANI/DNIS received
Queued	QueuedConnection Queue CallingDevice CalledDevice LastRedirection NumberCallsInQueue	= 0001 800 = 800 = 4232200 = 600 = = 7	Call queued to gate 4
Delivered	AlertingConnection AlertingDevice CallingDevice CalledDevice LastRedirection	= 0001 33 = 33 = 4232200 = 600 = 600	Agent 33 is “beeped”
Established	EstablishedConnection AnsweringDevice Callingdevice CalledDevice LastRedirection	= 0001 33 = 33 = 4232200 = 600 =	Agent 33 is connected

10.5 Inbound Call Transferred via Operator

Trunk 1234 calls from ANI 423220 with DNIS 500, call is answered by operator 100. Operator holds trunk and calls station 555, who answers (call ID 0002). Operator conferences and releases to complete transfer.

ServiceInitiated	InitiatedConnection	= 0001 1234	Trunk 1234 goes off-hook
Originated	OriginatedConnection CallingDevice CalledDevice	= 0001 1234 = 4232200 = 500	ANI/DNIS received
Delivered	AlertingConnection AlertingDevice CallingDevice CalledDevice LastRedirection	= 0001 100 = 100 = 4232200 = 500 =	Operator 100 is rung
Established	EstablishedConnection AnsweringDevice Callingdevice CalledDevice LastRedirection	= 0001 100 = 100 = 4232200 = 500 =	Operator 100 answers

Held	HeldConnection HoldingDevice	= 0001 100 = 100	Operator holds trunk
ServiceInitiated	InitiatedConnection	= 0002 100	Operator starts new call
Originated	OriginatedConnection CallingDevice CalledDevice	= 0002 100 = 100 = 555	Operator dials 555
Delivered	AlertingConnection AlertingDevice CallingDevice CalledDevice LastRedirection	= 0002 555 = 555 = 100 = 555 =	Station 555 is rung
Established	EstablishedConnection AnsweringDevice Callingdevice CalledDevice LastRedirection	= 0002 555 = 555 = 100 = 555 =	Station 555 Answers
Conference	PrimaryOldCall SecondaryOldCall ConferenceController AddedParty ConnectionID list	= 0001 100 = 0002 100 = 100 = 555 = 0001 1234 + 0001 100 + 0001 555	Operator conferences
ConnectionCleared	DroppedConnection Releasing Device	= 0001 100 = 100	Operator drops out

10.6 Inbound Call Transferred via VRU

Trunk 1234 (ANI 4232200) calls in via DNIS 300. This is answered by a VRU (station 999). The VRU performs a simple transfer (flash + dial + hang-up) to station 555. Station 555 answers.

ServiceInitiated	InitiatedConnection	= 0001 1234	Trunk 1234 goes off-hook
Originated	OriginatedConnection CallingDevice CalledDevice	= 0001 1234 = 4232200 = 300	ANI/DNIS received
Delivered	AlertingConnection AlertingDevice CallingDevice CalledDevice LastRedirection	= 0001 999 = 999 = 4232200 = 300 =	VRU port is rung
Established	EstablishedConnection	= 0001 999	VRU answers trunk

	AnsweringDevice	= 999	
	Callingdevice	= 4232200	
	CalledDevice	= 300	
	LastRedirection	=	
Delivered	AlertingConnection	= 0001 555	Station 555 is rung
	AlertingDevice	= 555	
	CallingDevice	= 4232200	
	CalledDevice	= 300	
	LastRedirection	=	
ConnectionCleared	DroppedConnection	= 0001 999	VRU drops out
	Releasing Device	= 999	
Established	EstablishedConnection	= 0001 555	Station 555 Answers
	AnsweringDevice	= 555	
	Callingdevice	= 4232200	
	CalledDevice	= 300	
	LastRedirection	=	

11 eQueue/eNterprise Configuration

11.1 IP Hosts Addresses

The eQueue/eNterprise external LAN is configured by the standard UNIX /etc/hosts file or DNIS server. Since mosts systems use redundant computers, an alias is used to reference the current online computer. Thus, systems would have hosts names such as “myswitch”, “myswitch-a”, “myswitch-b”. The “myswitch” name in this example will always refer to the online system, and should be used by the CSTA application as the host to connect to.

11.2 IP Port Numbers

IP port numbers are configured in the /etc/services file. The service names used are:

- pbx_asn1 The standard ASN1 encoded CSTA link
- pbx_csta The Novel TSAPI style link

These values may be edited to match customer requirements, the names may not be changed.

11.3 License

The eQueue/eNterprise must have a software license with CSTA enabled.

11.4 Database Options

See eQueue/eNterprisetechical Reference Manual for full details.
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The table size XMON determines how many simultaneous monitors are supported

The ACD feature code “CSTA Group” defines the digits that proceed a group number in a device identifier. For example, if the CSTA Group prefix is #7 then “#73” is the device string for group 3. The “CSTA port” is no longer used.

The system parameter IBMD determines in IBM extended device types are enabled. Set to 0 to disable, 1 to enable. These extensions are non-conformant and should only be used when connecting to an IBM CallPath II server.

ANNEX A - PICS Proforma

A.1 Introduction

The Protocol Implementation Conformance Statement (PICS) is a statement of which capabilities and options of the protocol have been implemented. The PICS can have a number of uses, including use:

- by the protocol implementor, as a check-list to reduce the risk of failure to conform to the standard through oversight;
- by the supplier and acquirer (or potential acquirer) of the implementation, as a detailed indication of the capabilities of the implementation, stated relative to the common basis for understanding provided by the standard PICS proforma;
- by the user (or potential user) of the implementation, as a basis for initially checking the possibility of interworking with another implementation (note that, while interworking cannot be guaranteed, failure to interwork can often be predicted from incompatible PICS);
- by a protocol tester, as the basis for selecting appropriate tests against which to assess the claim for conformance of the implementation.

A.2 Definitions and abbreviations

This Standard uses the following terms defined in ISO 9646-1:

- Protocol Implementation Conformance Statement (PICS);
- PICS Proforma.

In the "Reference" columns of the body of the PICS proforma, the letter S refers to the CSTA Services Standard ECMA-179 and the letter P refers to the CSTA Protocol Standard ECMA-180.

The following terms are used in the "Status" columns of the body of the PICS proforma:

m	mandatory; the capability is required for conformance to the protocol.
o	optional; the capability is not required for conformance to the protocol, or is required only within constraints described in dependencies ("if" statements). If the capability is implemented, it is required to conform to the protocol specifications.
o.<n>	optional, but support of at least one of the group of options labelled by the same numeral <n> is required.
C.<cid>	conditional; the requirement is conditional according to the condition identified by <cid>.
<item>	simple-predicate condition, dependent on the support marked for <item>.

A.3 Conformance

The supplier of a protocol implementation which is claimed to conform to ECMA-180 shall complete a copy of the Protocol Implementation Conformance Statement (PICS) proforma in clauses A.5 to A.14.

A.4 Instructions for completing the PICS proforma

The first part of the PICS proforma, the Implementation Identification (clause A.5), is to be completed as indicated with the information necessary to identify fully both the supplier and the implementation.

The main part of the PICS proforma (clauses A.6 to A.14) is a fixed format questionnaire divided into subclauses each containing a group of individual items. Answers to the questionnaire items are to be provided in the rightmost column, either by marking an answer to indicate a restricted choice (usually Yes or No), or by checking off all supported values (for parameters with a default).

Each item is identified by an item reference in the first column; the second column title indicates the nature of the table items which follow. The third column contains the references to material that specifies the item in the main body of ECMA-179 and ECMA-180. The remaining columns record the status of the item - whether support is mandatory, optional, or not applicable - and provide space for the answers.

Where a service is not supported, any parameters or dependent service components are not applicable. These dependencies are indicated in the status column using the item identifier as a key. It is not necessary to complete items in any subsidiary sections if a "No" response is given to the primary service component.

For supported services, a negative response to a mandatory subsidiary item indicates that the service does not conform to ECMA-180, and conformance cannot be claimed for that service.

A.5 Implementation identification

Supplier	EOn Communcations Corp.
Protocol Version	1.0.1
Date of Statement	09/25/96
Contact point for queries about the PICS	tel 1-800-955-5321
Implementation Name(s) and Version(s)	EQueue 4000 / eNterprise 2000
Other information necessary for full identification - e.g. name(s) and version(s) for machines and/or operating systems; system name(s)	

The first five items are required for all implementations; other information may be completed as appropriate in meeting the requirement for full identification.

The terms Name and Version should be interpreted appropriately to correspond with a supplier's terminology (e.g. Type, Series, Model).

A.6 Switching function services**A.6.1 Alternate Call**

Item	Service / Feature	Reference	Status	N/A	Supported?
A1	Alternate Call service	S9.1 P9.1	o		Yes [X] No []
A1a	Service Result	P5.3 P9.1	A1:m	[]	Yes [X] No []
A1b	Held Call parameter	P9.1	A1:o1		Yes [X] No []
A1c	Active Call parameter	P9.1	A1:o1		Yes [X] No []
A1d	Security Parameter	P16.8	A1:o		Yes [] No [X]
A1e	Private Data in Request	P16.8	A1:o		Yes [] No [X]
A1f	Private Data in Result	P18.8	A1:o		Yes [] No [X]
A1g	Report of Service Errors	P14	A1:m	[]	Yes [X]

A.6.2 Answer Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A2	Answer Call service	S9.2 P9.2	o		Yes [X] No []
A2a	Service Result	P5.3 P9.2	A2:m	[]	Yes [X] No []
A2b	Call to be Answered parameter	P9.2	A2:o1		Yes [X] No []
A2c	Security Parameter	P16.8	A2:o		Yes [] No [X]
A2d	Private Data in Request	P16.8	A2:o		Yes [] No [X]
A2e	Private Data in Result	P18.8	A2:o		Yes [] No [X]
A2f	Report of Service Errors	P14	A2:m	[]	Yes [X]

A.6.3 Call Completion

Item	Service / Feature	Reference	Status	N/A	Supported?
A3	Call Completion service	S9.3 P9.3	o		Yes [X] No []
A3a	Camp On feature	P9.3	A3:o1		Yes [X] No []
A3b	Call Back feature	P9.3	A3:o1		Yes [X] No []
A3c	Intrude feature	P9.3	A3:o1		Yes [X] No []
A3d	Service Result	P5.3 P9.3	A3:m	[]	Yes [X]
A3e	Call to Complete parameter	P9.3	A3:m	[]	Yes [X]
A3f	Security Parameter	P16.8	A3:o		Yes [] No [X]
A3g	Private Data in Request	P16.8	A3:o		Yes [] No [X]
A3h	Private Data in Result	P16.8	A3:o		Yes [] No [X]
A3i	Report of Service Errors	P14	A3:m	[]	Yes [X]

A.6.4 Clear Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A4	Clear Call service	S9.4 P9.4	o		Yes [X] No []
A4a	Service Result	P5.3 P9.4	A4:m	[]	Yes [X]
A4b	Call to be Cleared parameter	P9.4	A4:m	[]	Yes [X]
A4c	Security Parameter	P16.8	A4:o		Yes [] No [X]
A4d	Private Data in Request	P16.8	A4:o		Yes [] No [X]
A4e	Private Data in Result	P16.8	A4:o		Yes [] No [X]
A4f	Report of Service Errors	P14	A4:m	[]	Yes [X]

A.6.5 Clear Connection

Item	Service / Feature	Reference	Status	N/A	Supported?
A5	Clear Connection service	S9.5 P9.5	o		Yes [X] No []
A5a	Service Result	P5.3 P9.5	A5:m	[]	Yes [X]
A5b	Connection to be Cleared parameter	P9.5	A5:m	[]	Yes [X]
A5c	Security Parameter	P16.8	A5:o		Yes [] No [X]
A5d	Private Data in Request	P16.8	A5:o		Yes [] No [X]
A5e	Private Data in Result	P16.8	A5:o		Yes [] No [X]
A5f	Report of Service Errors	P14	A5m	[]	Yes [X]

A.6.6 Conference Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A6	Call Completion service	S9.6 P9.6	o		Yes [X] No []
A6a	Service Result	P5.3 P9.6	A6:m	[]	Yes [X]
A6b	Held Call parameter	P9.6	A6:o1		Yes [X] No []
A6c	Active Call parameter	P9.6	A6:o1		Yes [X] No []
A6d	Conference Call parameter in Result	P9.6	A6a:m	[]	Yes [X]
A6e	Connection ID list	P9.6	A6:o		Yes [X] No []
A6f	Static Device ID included in list	P9.6	A6e:o	[]	Yes [X] No []
A6g	Security Parameter	P16.8	A6:o		Yes [] No [X]
A6h	Private Data in Request	P16.8	A6:o		Yes [] No [X]
A6i	Private Rata in Result	P16.8	A6:o		Yes [] No [X]
A6j	Report of Service Errors	P14	A6:m	[]	Yes [X]

A.6.7 Consultation Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A7	Consultation Call service	S9.6 P9.7	o		Yes [X] No []
A7a	Service Result	P5.3 P9.7	A7:m	[]	Yes [X]
A7b	Existing call parameter	P9.7	A7:o1		Yes [X] No []
A7c	Called Device ID parameter	P9.7	A7:o1		Yes [X] No []
A7d	Initiated Call parameter in Result	P9.7	A7a:m	[]	Yes [X]
A7e	Security Parameter	P16.8	A7:o		Yes [] No [X]
A7f	Private Data in Request	P16.8	A7:o		Yes [] No [X]
A7g	Private Data in Result	P16.8	A7:o		Yes [] No [X]
A7h	Report of Service Errors	P14	A7:m	[]	Yes [X]

A.6.8 Divert Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A8	Divert Call service	S9.8 P9.8	o		Yes [X] No []
A8a	Deflect feature	P9.8	A8:o1		Yes [X] No []
A8b	Directed Pickup feature	P9.8	A8:o1		Yes [X] No []
A8c	Group Pickup feature	P9.8	A8:o1		Yes [X] No []
A8d	Service Result	P5.3 P9.8	A8:m	[]	Yes [X]
A8e	Call to be Diverted parameter	P9.1	A8a:m		Yes [X] No []
A8f	New Destination parameter	P16.6	A8a:m		Yes [X] No []
A8g	Call to be Picked Up parameter	P16.6	A8b:m	[]	Yes [X]
A8h	Requesting Device parameter	P16.6	A8b:m		Yes [X] No []
A8i	Device ID of group parameter	P16.6	A8c:m		Yes [X] No []
A8j	Security Parameter	P16.8	A8:o		Yes [] No [X]
A8k	Private Data in Request	P16.8	A8:o		Yes [] No [X]
A8l	Private Data in Result	P16.8	A8:o		Yes [] No [X]
A8m	Report of Service Errors	P14	A8:m	[]	Yes [X]

A.6.9 Hold Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A9	Hold Call service	S9.9 P9.9	o		Yes [X] No []
A9a	Service Result	P5.3 P9.9	A9:m	[]	Yes [X]
A9b	Call to be Held	P9.9	A9:m	[]	Yes [X]
A9c	Procedures for Connection Reservation parameter = TRUE	P9.9.1	A9:o		Yes [] No [X]
A9d	Security Parameter	P16.8	A9:o		Yes [] No [X]
A9e	Private Data in Request	P16.8	A9:o		Yes [] No [X]
A9f	Private Data in Result	P16.8	A9:o		Yes [] No [X]
A9g	Report of Service Errors	P14	A9:m	[]	Yes [X]

A.6.10 Make Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A10	Make Call service	S9.10 P9.10	o		Yes [X] No []
A10a	Service Result	P5.3 P9.10	A10:m	[]	Yes [X]
A10b	Call Device ID parameter	P9.10	A10:m	[]	Yes [X]
A10c	Called Device ID parameter	P10	A10:m	[]	Yes [X]
A10d	Initiated Call parameter in Result	P10	A10a:m	[]	Yes [X]
A10e	Security Parameter	P16.8	A10:o		Yes [] No [X]
A10f	Private Data in Request	P16.8	A10:o		Yes [] No [X]
A10g	Private Data in Result	P16.8	A10:o		Yes [] No [X]
A10h	Report of Service Errors	P14	A10:m	[]	Yes [X]

A.6.11 Make Predictive Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A11	Make Predictive service	S9.11 P9.11	o		Yes [] No [X]
A11a	Service Result	P5.3 P9.11	A11:m	[]	Yes []
A11b	Calling Device ID parameter	P9.11	A11:m	[]	Yes []
A11c	Called Device ID parameter	P9.11	A11:m	[]	Yes []
A11d	Allocation on Established condition	S9.11.1	A11:o		Yes [] No []
A11e	Initiated Call parameter in Result	P11	A11a:m	[]	Yes []
A11f	Security Parameter	P16.8	A11:o		Yes [] No []
A11g	Private Data in Request	P16.8	A11:o		Yes [] No []
A11h	Private Data in Result	P16.8	A11:o		Yes [] No []
A11i	Report of Service Errors	P14	A11:m	[]	Yes []

A.6.12 Query Device

Item	Service / Feature	Reference	Status	N/A	Supported?
A12	Query Device service	S9.12 P9.12	o		Yes [X] No []
A12a	Message Waiting feature	P9.12	A12:o1		Yes [X] No []
A12b	Do Not Disturb feature	P9.12	A12:o1		Yes [X] No []

A12c	Forwarding feature	P9.12	A12:o1		Yes [X] No []
A12d	Last Number feature	P9.12	A12:o1		Yes [X] No []
A12e	Device Info feature	P9.12	A12:o1		Yes [X] No []
A12f	Agent State feature	P9.12	A12:o1		Yes [X] No []
A12g	Service Result	P5.3 P9.12	A12:m	[]	Yes [X]
A12h	Device parameter in Request	P9.12	A12:m	[]	Yes [X]
A12i	Feature parameter in Request	P9.12	A12:m	[]	Yes [X] No []
A12j	Device Information in Service Result	P9.12	A12g:m	[]	Yes [X]
A12k	Message Waiting On	P16.6	A12a:m	[]	Yes [X] No []
A12l	Do Not Disturb On	P16.6	A12b:m	[]	Yes [X] No []
A12m	Forward Immediate	P16.6	A12c:o1	[]	Yes [X] No []
A12n	Forward Busy	P16.6	A12c:o1	[]	Yes [X] No []
A12o	Forward No Answer	P16.6	A12c:o1	[]	Yes [X] No []
A12p	Forward Busy Internal	P16.6	A12c:o1	[]	Yes [X] No []
A12q	Forward Busy External	P16.6	A12c:o1	[]	Yes [X] No []
A12r	Forward No Answer Internal	P16.6	A12c:o1	[]	Yes [X] No []
A12s	Forward No Answer External	P16.6	A12c:o1	[]	Yes [X] No []
A12t	Forward-to Number	P16.6	A12c:o1	[]	Yes [X]
A12u	Last Dialed Number	P16.6	A12d:m	[]	Yes [X]
A12v	Device ID	P16.6	A12e:o1	[]	Yes [X] No []
A12w	Device Type	P16.6	A12e:o1	[]	Yes [X] No []
A12x	Device Class	P16.6	A12e:o1	[]	Yes [X] No []
A12y	Null	P16.6	A12f:o1	[]	Yes [] No [X]
A12z	Not Ready	P16.6	A12f:o1	[]	Yes [X] No []
A12aa	Ready	P16.6	A12f:o1	[]	Yes [X] No []
A12bb	Work Not Ready	P16.6	A12f:o1	[]	Yes [X] No []
A12cc	Work Ready	P16.6	A12f:o1	[]	Yes [X] No []
A12dd	Security parameters	P16.6	A12:o		Yes [] No [X]
A12ee	Private Data in Request	P16.8	A12:o		Yes [] No [X]
A12ff	Private Data in Result	P16.8	A12:o		Yes [] No [X]
A12gg	Report of Service Errors	P14	A12:m	[]	Yes [X]

A.6.13 Reconnect Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A13	Reconnect Call service	S9.13 P9.13	o		Yes [X] No []
A13a	Service Result	P5.3 P9.13	A13:m	[]	Yes [X]
A13b	Held Call parameter	P9.1	A13:o1		Yes [X] No []
A13c	Active Call parameter	P9.1	A13:o1		Yes [X] No []
A13d	Security Parameter	P16.8	A13:o		Yes [] No [X]
A13e	Private Data in Request	P16.8	A13:o		Yes [] No [X]
A13f	Private Data in Result	P16.8	A13:o		Yes [] No [X]
A13g	Report of Service Errors	P14	A13:m	[]	Yes [X]

A.6.14 Retrieve Call

Item	Service / Feature	Reference	Status	N/A	Supported?
A14	Retrieve Call service	S9.10 P9.14	o		Yes [X] No []
A14a	Service Result	P5.3 P9.14	A14:m	[]	Yes [X]
A14b	Call to be Retrieved parameter	P9.14	A14:m	[]	Yes [X]
A14c	Security Parameter	P16.8	A14:o		Yes [] No [X]
A14d	Private Data in Request	P16.8	A14:o		Yes [] No [X]
A14e	Private Data in Result	P16.8	A14:o		Yes [] No [X]
A14f	Report of Service Errors	P14	A14:m	[]	Yes [X]

A.6.15 Set Feature

Item	Service / Feature	Reference	Status	N/A	Supported?
A15	Set Feature service	S9.15 P9.15	o		Yes [X] No []
A15a	Message Waiting feature	P9.15	A15:o1		Yes [X] No []
A15b	Do Not Disturb feature	P9.15	A15:o1		Yes [X] No []
A15c	Forwarding feature	P9.15	A15:o1		Yes [X] No []
A15d	Agent Parameter feature	P9.15	A15:o1		Yes [X] No []
A15e	Service Result	P5.3 P9.15	A15:m	[]	Yes [X]
A15f	Device parameter in Request	P9.15	A15:m	[]	Yes [X]
A15g	Feature parameter in Request	P9.15	A15:m	[]	Yes [X]
A15h	Forward Always	P9.15	A15c:o1	[]	Yes [X] No []
A15i	Forward Busy	P9.15	A15c:o1	[]	Yes [X] No []
A15j	Forward No Answer	P9.15	A15c:o1	[]	Yes [X] No []
A15k	Forward Busy Internal	P9.15	A15c:o1	[]	Yes [X] No []
A15l	Forward Busy External	P9.15	A15c:o1	[]	Yes [X] No []
A15m	Forward No Answer Internal	P9.15	A15c:o1	[]	Yes [X] No []
A15n	Forward No Answer External	P9.15	A15c:o1	[]	Yes [X] No []
A15o	Forward to Device	P9.15	A15c:o	[]	Yes [X] No []
A15p	Login	P9.15	A15d:o1	[]	Yes [X] No []
A15q	Logout	P9.15	A15d:o1	[]	Yes [X] No []
A15r	Ready	P9.15	A15d:o1	[]	Yes [X] No []
A15t	Not Ready	P9.15	A15d:o1	[]	Yes [X] No []

A15u	Work Ready	P9.15	A15d:o1	[]	Yes [X] No []
A15v	Work Not Ready	P9.15	A15d:o1	[]	Yes [X] No []
A15v	Agent ID	P9.15	c1:o	[]	Yes [X] No []
A15w	ACD Pilot or Group	P9.15	c1::o	[]	Yes [X] No []
A15x	Agent Password	P9.15	A15q:o	[]	Yes [] No [X]
A15y	Security parameters	P9.15	A15:o		Yes [] No [X]
A15z	Private Data in Request	P16.8	A15:o		Yes [] No [X]
A15aa	Private Data in Result	P16.8	A15:o		Yes [] No [X]
A15bb	Report of Service Errors	P14	A15:m	[]	Yes [X]

c1: (A15p or A15q)

A.6.16 Transfer call

Item	Service / Feature	Reference	Status	N/A	Supported?
A16	Transfer Call service	S9.16 P9.16	o		Yes [X] No []
A16a	Service Result	P5.3 P9.16	A16:m	[]	Yes [X]
A16b	Held Call parameter	P9.16	A16:o1		Yes [X] No []
A16c	Active Call parameter	P9.16	A16:o1		Yes [X] No []
A16d	Transferred Call parameter in Result	P9.16	A16a:m	[]	Yes [X]
A16e	List of remaining parties	P9.16	A16:o		Yes [X] No []
A16f	Static Device ID included in list	P9.16	A16e:o	[]	Yes [X] No []
A16g	Security Parameter	P16.8	A16:o		Yes [] No [X]
A16h	Private Data in Request	P16.8	A16:o		Yes [] No [X]
A16i	Private Data in Result	P16.8	A16:o		Yes [] No [X]
A16j	Report of Service Errors	P14	A16:m	[]	Yes [X]

A.7 Switching function events**A.7.1 Call Events****A.7.1.1 Event Macro**

Item	Service / Feature	Reference	Status	N/A	Supported?
B1	Event macro	S10.2 P10	o		Yes [X] No []
B1a	Monitor CrossRefID	S10.2.1 P5.4 P10	B1:m	[]	Yes [X]
B1b	EventTypeId	P10	B1:m	[]	Yes [X]
B1c	EventInfo	P10	B1:m	[]	Yes [X]
B1d	CSTA Private Data	P10	B1:o		Yes [] No [X]

A.7.1.2 Call cleared

Item	Service / Feature	Reference	Status	N/A	Supported?
B2	Call Cleared event	S10.2.3.1 P10.1.1	o		Yes [X] No []
B2a	Cleared Call parameter	P10.1.1	B2:m	[]	Yes [X]
B2b	Cause parameter	P10.1.1	B2:o		Yes [X] No []
B2c	Local Connection information	P10.1.1	B2:o		Yes [X] No []

A.7.1.3 Conferenced

Item	Service / Feature	Reference	Status	N/A	Supported?
B3	Conferenced event	S10.2.3.2 P10.1.2	o		Yes [X] No []
B3a	Primary Old Call parameter	P10.1.2	B3:m	[]	Yes [X]
B3b	Secondary Old Call parameter	P10.1.2	B3:C.1	[]	Yes [X] No []
B3c	Conference Controller parameter	P10.1.2	B3:m	[]	Yes [X]
B3d	Added Party parameter	P10.1.2	B3:m	[]	Yes [X]
B3e	Cause Parameter	P10.1.2	B3:o		Yes [X] No []
B3f	Local Connection information	P10.1.2	B3:o		Yes [X] No []
B3g	Connection ID list	P10.1.2	B3:o		Yes [] No [X]

C.1 If provided in previous events then mandatory; else optional

A.7.1.4 Connection cleared

Item	Service / Feature	Reference	Status	N/A	Supported?
B4	Connection Cleared event	S10.2.3.3 P10.1.3	o		Yes [X] No []
B4a	Dropped Connection parameter	P10.1.3	B4:m	[]	Yes [X]
B4b	Releasing Device parameter	P10.1.3	B4:m	[]	Yes [X]
B4c	Cause Parameter	P10.1.3	B4:o		Yes [X] No []
B4d	Local Connection information	P10.1.3	B4:o		Yes [X] No []

A.7.1.5 Delivered

Item	Service / Feature	Reference	Status	N/A	Supported?
B5	Delivered event	S10.2.3.4 P10.1.4	o		Yes [X] No []
B5a	Alerting Connection ID parameter	P10.1.4	B5:m	[]	Yes [X]
B5b	Alerting Device ID parameter	P10.1.4	B5:m	[]	Yes []
B5c	Calling Device ID parameter	P10.1.4	B5:m	[]	Yes []
B5d	Called Device ID parameter	P10.1.4	B5:m	[]	Yes []
B5e	Last Redirecting Device parameter	P10.1.4	B5:m	[]	Yes []
B5f	Cause parameter	P10.1.4	B5:o		Yes [X] No []
B5g	Local Connection information	P10.1.4	B5:o		Yes [X] No []

A.7.1.6 Diverted

Item	Service / Feature	Reference	Status	N/A	Supported?
B6	Diverted event	S10.2.3.5 P10.1.5	o		Yes [X] No []
B6a	Diverted Connection ID parameter	P10.1.5	B6:C.2	[]	Yes [X] No []
B6b	Diverting Device parameter	P10.1.5	B6:m	[]	Yes [X]
B6c	New Destination parameter	P10.1.5	B6:m	[]	Yes [X]
B6d	Cause parameter	P10.1.5	B6:o		Yes [X] No []
B6e	Local Connection information	P10.1.5	B6:o		Yes [X] No []

C.2: If the call alerted the device then mandatory; else optional

A.7.1.7 Established

Item	Service / Feature	Reference	Status	N/A	Supported?
B7	Established event	S10.2.3.6 P10.1.6	o		Yes [X] No []
B7a	Established Connection parameter	P10.1.6	B7:m	[]	Yes [X]
B7b	Answering Device parameter	P10.1.6	B7:m	[]	Yes [X]
B7c	Calling Device ID parameter	P10.1.6	B7:m	[]	Yes [X]
B7d	Called Device ID parameter	P10.1.6	B7:m	[]	Yes [X]
B7e	Last Redirecting Device parameter	P10.1.6	B7:m	[]	Yes [X]
B7f	Cause parameter	P10.1.6	B7:o		Yes [X] No []
B7g	Local Connection information	P10.1.6	B7:o		Yes [X] No []

A.7.1.8 Failed

Item	Service / Feature	Reference	Status	N/A	Supported?
B8	Failed event	S10.2.3.7 P10.1.7	o		Yes [X] No []
B8a	Failed Connection parameter	P10.1.7	B8:m	[]	Yes [X]
B8b	Failed Device parameter	P10.1.7	B8:m	[]	Yes [X]
B8c	Called Device ID parameter	P10.1.7	B8:m	[]	Yes [X]
B8d	Cause parameter	P10.1.7	B8:o		Yes [X] No []
B8e	Local Connection information	P10.1.7	B8:o		Yes [X] No []

A.7.2.9 Held

Item	Service / Feature	Reference	Status	N/A	Supported?
B9	Held event	S10.2.3.8 P10.1.8	o		Yes [X] No []
B9a	Held Connection	P10.1.8	B9:m	[]	Yes [X]
B9b	Holding Device parameter	P10.1.8	B9:m	[]	Yes [X]
B9c	Cause parameter	P10.1.8	B9:o		Yes [X] No []
B9d	Local Connection information	P10.1.8	B9:o		Yes [X] No []

A.7.2.10 Network Reached

Item	Service / Feature	Reference	Status	N/A	Supported?
B10	Network Reached event	S10.2.3.9 P10.1.9	o		Yes [X] No []
B10a	Connection ID parameter	P10.1.9	B9:m	[]	Yes [X]
B10b	Trunk Used parameter	P10.1.9	B9:m	[]	Yes [X]
B10c	Called Device ID parameter	P10.1.9	B9:m	[]	Yes [X]
B10d	Cause parameter	P10.1.9	B9:o		Yes [X] No []
B10e	Local Connection information	P10.1.9	B9:o		Yes [X] No []

A.7.2.11 Originated

Item	Service / Feature	Reference	Status	N/A	Supported?
B11	Originated event	S10.2.3.10 P10.1.10	o		Yes [X] No []
B11a	Originated Connection parameter	P10.1.10	B11:m	[]	Yes [X]
B11b	Calling Device parameter	P10.1.10	B11:m	[]	Yes [X]
B11c	Called Device parameter	P10.1.10	B11:m	[]	Yes [X]
B11d	Cause parameter	P10.1.10	B11:o		Yes [X] No []
B11e	Local Connection information	P10.1.10	B11:o		Yes [X] No []

A.7.2.12 Queued

Item	Service / Feature	Reference	Status	N/A	Supported?
B12	Queued event	S10.2.3.11 P10.1.11	o		Yes [X] No []
B12	Queued Connection parameter	P10.1.11	B12:m	[]	Yes [X]
B12b	Queued parameter	P10.1.11	B12:m	[]	Yes [X]
B12c	Queued Device parameter	P10.1.11	B12:m	[]	Yes [X]
B12d	Called Device parameter	P10.1.11	B12:m	[]	Yes [X]
B12e	Last Redirection Device parameter	P10.1.11	B12:m	[]	Yes [X]
B12f	Number of Calls in Queue	P10.1.11	B12:o		Yes [] No [X]
B12g	Cause parameter	P10.1.11	B12:o		Yes [X] No []
B12h	Local Connection information	P10.1.11	B12:o		Yes [X] No []

A.7.2.13 Retrieved

Item	Service / Feature	Reference	Status	N/A	Supported?
B13	Retrieved event	S10.2.3.12 P10.1.12	o		Yes [X] No []
B13a	Retrieved Connection parameter	P10.1.12	B13:m	[]	Yes [X]
B13b	Retrieving Device ID parameter	P10.1.12	B13:m	[]	Yes [X]
B13c	Cause parameter	P10.1.12	B13:o		Yes [X] No []
B13d	Local Connection information	P10.1.12	B13:o		Yes [X] No []

A.7.2.14 Service Initiated

Item	Service / Feature	Reference	Status	N/A	Supported?
B14	Service Initiated event	S10.2.3.13 P10.1.13	o		Yes [X] No []
B14a	Initiated Connection parameter	P10.1.13	B14:m	[]	Yes [X]
B14b	Cause parameter	P10.1.13	B14:o		Yes [X] No []
B14c	Local Connection information	P10.1.13	B14:o		Yes [X] No []

A.7.2.15 Transferred

Item	Service / Feature	Reference	Status	N/A	Supported?
B15	Network Reached event	S10.2.3.14 P10.1.14	o		Yes [X] No []
B15a	Primary Old Call parameter	P10.1.14	B15	[]	Yes [X]
B15b	Secondary Old Call parameter	P10.1.14	B15:C.3	[]	Yes [X] No []
B15c	Transferring Device parameter	P10.1.14	B15:m	[]	Yes [X]
B15d	Transferred-to Device parameter	P10.1.14	B15:m	[]	Yes [X]
B15e	Cause parameter	P10.1.14	B15:o		Yes [X] No []
B15f	Local Connection information	P10.1.14	B15:o		Yes [X] No []
B15g	Connection ID list	P10.1.14	B15:o		Yes [] No [X]
B15h	Static Device ID included in list	P10.1.14	B15g:o	[X]	Yes [] No []

C.3: If parameter in previous events then mandatory; else optional

A.7.2 Agent events

A.7.2.1 Agent logged on

Item	Service / Feature	Reference	Status	N/A	Supported?
B16	Logged On event	S10.2.2.1 P10.3.1	B1b:o		Yes [X] No []
B16a	Agent Device parameter	P10.3.1	B16:m	[]	Yes [X]
B16b	Agent ID parameter	P10.3.1	B16:o		Yes [X] No []
B16c	Agent Group parameter	P10.3.1	B16:o		Yes [X] No []
B16d	Password parameter	P10.3.1	B16:o		Yes [] No [X]

A.7.2.2 Agent logged off

Item	Service / Feature	Reference	Status	N/A	Supported?
B17	Logged Off event	S11.2.2.1 P10.3.3	B1b:o		Yes [X] No []
B17a	Agent Device parameter	P10.3.3	B17:m	[]	Yes [X]
B17b	Agent ID parameter	P10.3.3	B17:o		Yes [X] No []
B17e	Agent Group parameter	P10.3.3	B17:o		Yes [X] No []

A.7.2.3 Agent ready

Item	Service / Feature	Reference	Status	N/A	Supported?
B18	Ready event	S10.2.2.4 P10.3.4	o		Yes [X] No []
B18a	Agent Device parameter	P10.3.4	B18:m	[]	Yes [X]
B18b	Agent ID parameter	P10.3.4	B18:o		Yes [X] No []

A.7.2.4 Agent not ready

Item	Service / Feature	Reference	Status	N/A	Supported?
B19	Ready event	S10.2.2.3 P10.3.3	o		Yes [X] No []
B19a	Agent Device parameter	P10.3.3	B19:m	[]	Yes [X]
B19b	Agent ID parameter	P10.3.3	B19:o		Yes [X] No []

A.7.3.5 Agent Work Ready

Item	Service / Feature	Reference	Status	N/A	Supported?
B20	Ready event	S10.2.2.6 P10.3.6	o		Yes [X] No []
B20a	Agent Device parameter	P10.3.6	B20:m	[]	Yes [X]
B20b	Agent ID parameter	P10.3.6	B20:o		Yes [X] No []

A.7.3.6 Agent Work Not Ready

Item	Service / Feature	Reference	Status	N/A	Supported?
B21	Work Not Ready event	S10.2.2.5 P10.3.5	o		Yes [X] No []
B21a	Agent Device parameter	P10.3.5	B21:m	[]	Yes [X]
B21b	Agent ID parameter	P10.3.5	B21:o		Yes [X] No []

A.7.3 Other feature events**A.7.3.1 Call information**

Item	Service / Feature	Reference	Status	N/A	Supported?
B22	Call information event	S10.2.4.1 P10.2.1	o		Yes [X] No []
B22a	Connection ID parameter	P10.2.1	B22:m	[]	Yes [X]
B22b	Device parameter	P10.2.1	B22:o		Yes [X] No []
B22c	Account Information	P10.2.1	B22:o		Yes [X] No []
B22d	Authorisation Code	P10.2.1	B22:o		Yes [] No [X]

A.7.3.2 Do not disturb

Item	Service / Feature	Reference	Status	N/A	Supported?
B23	Do not disturb event	S10.2.4.2 P10.2.2	o		Yes [X] No []
B23a	Device	P10.2.2	B23:m	[]	Yes [X]
B23b	Do not disturb on	P10.2.2	B23:m	[]	Yes [X]

A.7.3.3 Forwarding

Item	Service / Feature	Reference	Status	N/A	Supported?
B24	Forwarding event	S10.2.4.3 P10.2.3	o		Yes [X] No []
B24a	Device parameter	P10.2.3	B24:m	[]	Yes [X]
B24b	Forwarding Information	P10.2.3	B24:m	[]	Yes [X]
B24c	Forwarding Type parameter	P16.6	B24b:m		Yes [X] No []
B24d	Forward Immediate On	P16.6	B24c:o		Yes [X] No []
B24e	Forward Immediate Off	P16.6	B24c:o		Yes [X] No []
B24f	Forward Busy On	P16.6	B24c:o		Yes [X] No []
B24g	Forward Busy Off	P16.6	B24c:o		Yes [X] No []
B24h	Forward No Answer On	P16.6	B24c:o		Yes [X] No []
B24i	Forward No Answer Off	P16.6	B24c:o		Yes [X] No []
B24j	Forward Busy Internal On	P16.6	B24c:o		Yes [X] No []
B24k	Forward Busy Internal Off	P16.6	B24c:o		Yes [X] No []
B24l	Forward Busy External On	P16.6	B24c:o		Yes [X] No []
B24m	Forward Busy External Off	P16.6	B24c:o		Yes [X] No []
B24n	Forward No Answer Internal On	P16.6	B24c:o		Yes [X] No []
B24o	Forward No Answer Internal Off	P16.6	B24c:o		Yes [X] No []
B24p	Forward No Answer External On	P16.6	B24c:o		Yes [X] No []
B24q	Forward No Answer External Off	P16.6	B24c:o		Yes [X] No []
B24r	Forward DN	P16.6	B24:o		Yes [X] No []

A.7.3.4 Message waiting

Item	Service / Feature	Reference	Status	N/A	Supported?
B25	Message waiting event	S11.2.4.4 P10.2.4	o		Yes [X] No []
B25a	Device for message	P10.2.4	B25:m	[]	Yes [X]
B25b	Invoking device	P10.2.4	B25:m	[]	Yes [X]
B25c	Message waiting on	P10.2.4	B25:m	[]	Yes [X]

A.7.4 Maintenance events**A.7.4.1 Back in service**

Item	Service / Feature	Reference	Status	N/A	Supported?
B26	Back in service event	S10.2.5.1 P10.4.1	o		Yes [] No [X]
B26a	Device ID parameter	P10.4.1	B26:m	[]	Yes []
B26b	Cause parameter	P10.4.1	B26:o		Yes [] No []

A.7.4.2 Out of service

Item	Service / Feature	Reference	Status	N/A	Supported?
B27	Out of service event	S10.2.5.2 P10.4.2	o		Yes [] No [X]
B27a	Device ID parameter	P10.4.2	B27:m	[]	Yes []
B27b	Cause parameter	P10.4.2	B27:o		Yes [] No []

A.7.5 Private events**A.7.5.1 Private**

Item	Service / Feature	Reference	Status	N/A	Supported?
B28	Is/are private event(s)	S10.2.6 P10.5	o		Yes [] No [X]

A.8 Computing function services**A.8.1 Route request**

Item	Service / Feature	Reference	Status	N/A	Supported?
C1	Route Request service	S12.3 P11.1	o		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
C1a	Cross Reference parameter	P11.1	C1:m	<input type="checkbox"/>	Yes <input type="checkbox"/>
C1b	Current Route parameter	P11.1	C1:m	<input type="checkbox"/>	Yes <input type="checkbox"/>
C1c	Calling Device parameter	P11.1	C1:o		Yes <input type="checkbox"/> No <input type="checkbox"/>
C1d	Routed Call parameter	P11.1	C1:o		Yes <input type="checkbox"/> No <input type="checkbox"/>
C1e	Route Select Algorithm	P11.1	C1:o		Yes <input type="checkbox"/> No <input type="checkbox"/>
C1f	Priority parameter	P11.1	C1:o		Yes <input type="checkbox"/> No <input type="checkbox"/>
C1g	Set-up Information	P11.1	C1:o		Yes <input type="checkbox"/> No <input type="checkbox"/>
C1h	Security parameters	P16.8	C1:o		Yes <input type="checkbox"/> No <input type="checkbox"/>
C1i	Private Data in Request	P116.8	C1:o		Yes <input type="checkbox"/> No <input type="checkbox"/>
C1j	Report of Service Errors	P14	C1:m	<input type="checkbox"/>	Yes <input type="checkbox"/>

A.8.2 Reroute service

Item	Service / Feature	Reference	Status	N/A	Supported?
C2	Re-route Service	S12.1 P11.2	o		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
C2a	Cross Reference parameter	P11.2	C2:m	<input type="checkbox"/>	Yes <input type="checkbox"/>
C2b	Security parameters	P16.8	C2:o		Yes <input type="checkbox"/> No <input type="checkbox"/>
C2c	Private Data in Request	P16.8	C2:o		Yes <input type="checkbox"/> No <input type="checkbox"/>
C2d	Report of Service Errors	P14	C2:m	<input type="checkbox"/>	Yes <input type="checkbox"/>

A.8.3 Route select

Item	Service / Feature	Reference	Status	N/A	Supported?
C3	Route Select service	S12.4 P11.3	o		Yes [] No [X]
C3a	Cross Reference parameter	P11.3	C3:m	[]	Yes []
C3b	Route Selected parameter	P11.3	C3:m	[]	Yes []
C3c	ISDN Set-Up parameter	P11.3	C3:o		Yes [] No []
C3d	Remaining Retries parameter	P11.3	C3:o		Yes [] No []
C3e	Route Used Request parameter	P18.6	C3:o		Yes [] No []
C3f	Security parameters	P18.8	C3:o		Yes [] No []
C3g	Private Data in Request	P18.7	C3:o		Yes [] No []
C3h	Report of Service Errors	P16	C3:m	[]	Yes []

A.8.4 Route used

Item	Service / Feature	Reference	Status	N/A	Supported?
C4	Route used request service	S12.5 P11.4	o		Yes [] No [X]
C4a	Cross reference	P11.4	C4:m	[]	Yes []
C4b	Route used	P11.4	C4:m	[]	Yes []
C4c	Calling device	P11.4	C4:o		Yes [] No []
C4d	Domain	P11.4	C4:o		Yes [] No []
C4e	Security parameters	P11.4	C4:o		Yes [] No []
C4f	Private State in Request	P16.8	C4:o		Yes [] No []
C4g	Report of Service Errors	P14	C4:m	[]	Yes []

A.8.5 Route end

Item	Service / Feature	Reference	Status	N/A	Supported?
C5	Route End service	S12.2 P11.5	o		Yes [] No [X]
C5a	Cross Reference parameter	P11.5	C5:m	[]	Yes []
C5b	Error Value parameters	P11.5	C5:o		Yes [] No []
C5c	Security parameters	P16.8	C5:o		Yes [] No []
C5d	Private Data in Request	P16.8	C5:o		Yes [] No []
C5e	Result of Service Errors	P16	C5:m	[]	Yes []

A.9 Bi-directional services**A.9.1 Escape Service**

Item	Service / Feature	Reference	Status	N/A	Supported?
D1	Escape service	S12.1 P12.1	o		Yes [] No [X]
D1a	Service Result	P5.3 P12.1	D1:m	[]	Yes []
D1b	Security parameters	P16.8	D1:o		Yes [] No []
D1c	Private Data in Request	P16.8	D1:o		Yes [] No []
D1e	Private Data in Response	P16.8	D1:o		Yes [] No []
D1f	report of Service Errors	P14	D1:m	[]	Yes []

A.9.2 System status

Item	Service / Feature	Reference	Status	N/A	Supported?
D2	System status service	S13.2 P12.2	o		Yes [] No [X]
D2a	Service Result	P5.3 P12.2	D2:m	[]	Yes [] No []
D2b	System status cause	P12.2	D2:m	[]	Yes []
D2c	Initialising	P12.2	D2a:o		Yes [] No []
D2d	Enabled	P12.2	D2a:o		Yes [] No []
D2e	Normal	P12.2	D2a:o		Yes [] No []
D2f	Messages lost	P12.2	D2a:o		Yes [] No []
D2g	Disabled	P12.2	D2a:o		Yes [] No []
D2h	Overload imminent	P12.2	D2a:o		Yes [] No []
D2i	Overload reached	P12.2	D2a:o		Yes [] No []
D2j	Overload relieved	P12.2	D2a:o		Yes [] No []
D2k	Security parameters	P16.8	D2:o		Yes [] No []
D2l	Private Data in Request	P16.8	D2:o		Yes [] No []
D2m	Private Data in Result	P16.8	D2:o		Yes [] No []
D2n	Report of Service Errors	P14	D2:m	[]	Yes []

A.10 Status reporting services**A.10.1 Change monitor filter**

Item	Service / Feature	Reference	Status	N/A	Supported?
E1	Change monitor filter service	S10.1 P13.2	o		Yes [X] No []
E1a	Service Result	P5.3 P13.2	E1:m	[]	Yes [X]
E1b	Cross reference ID parameter in request	P13.2	E1:m	[]	Yes [X]
E1c	Filter List in Request	P13.2	E1:m	[]	Yes [X]
E1d	Filter List in Result	P13.2	E1:o		Yes [X] No []
E1e	Security parameters	P16.8	E1:o		Yes [] No [X]
E1f	Private Data in Request	P16.8	E1:o		Yes [] No [X]
E1g	Private Data in Result	P16.8	E1:o		Yes [] No [X]
E1h	Report if Service Errors	P14	E1:m	[]	Yes [X]

A.10.2 Monitor start

Item	Service / Feature	Reference	Status	N/A	Supported?
E2	Monitor start service	S11.3 P13.1	o		Yes [X] No []
E2a	Service Result	P5.3 P13.1	E2:m	[]	Yes [X]
E2b	Monitor Object parameter	P13.1	E2:m	[]	Yes [X]
E2c	Monitor Object device	P13.1	E2:o1		Yes [X] No []
E2d	Monitor Object call	P13.1	E2:o1		Yes [X] No []
E2e	Monitor Type parameter	P13.1	E2:o		Yes [X] No []
E2f	Monitor Type device	P13.1	c1:o1		Yes [X] No []
E2g	Monitor Type call	P13.1	c1:o1		Yes [X] No []
E2h	Monitor Type default to Call Monitoring	P13.1	E2:o1		Yes [X] No []
E2i	Monitor Type default to Device Monitoring	P13.1	E2:o1		Yes [X] No []
E2j	Monitor filter for call processing events	P13.1	E2:o		Yes [X] No []
E2k	Monitor filter for feature events	P13.1	E2:o		Yes [X] No []
E2l	Monitor filter for agent events	P13.1	E2:o		Yes [X] No []
E2m	Monitor filter for maintenance events	P13.1	E2:o		Yes [] No [X]
E2n	Cross reference ID in result	P13.1	E2a:m	[]	Yes [X]
E2o	Security parameters	P16.8	E2:o		Yes [] No [X]
E2p	Private Data in Request	P16.8	E2:o		Yes [] No [X]
E2q	Private Data in Result	P16.8	E2:o		Yes [] No [X]
E2r	Report of Service Errors	P14	E2:m	[]	Yes [X]

A.10.3 Monitor stop

Item	Service / Feature	Reference	Status	N/A	Supported?
E3	Change monitor filter service	S10.4 P13.3	o		Yes [X] No []
E3a	Service Result	P5.3 P13.3	E3:m	[]	Yes [X]
E3b	Cross reference ID parameter in request	P13.3	E3:m	[]	Yes [X]
E3c	Security parameters	P16.8	E3:o		Yes [] No [X]
E3d	Private Data in Request	P16.8	E3:o		Yes [] No [X]
E3e	Private Data in Result	P16.8	E3:o		Yes [] No [X]
E3f	Report if Service Errors	P14	E3:m	[]	Yes [X]

A.10.4 Snapshot call

Item	Service / Feature	Reference	Status	N/A	Supported?
E4	Snapshot Call service	S10.5 P13.5	o		Yes [X] No []
E4a	Service Result	P5.3 P13.5	E4:m	[]	Yes [X]
E4b	Snapshot Object parameter in Request	P13.5	E4:m	[]	Yes [X]
E4c	Static Device ID parameter in Result	P13.5	E4a:m	[]	Yes [X]
E4d	Connection ID parameter in Result	P13.5	E4a:m	[]	Yes [X]
E4e	Local Connection State parameter in Result	P13.5	E4a:o	[]	Yes [X] No []
E4f	Security parameters	P16.8	E4:o		Yes [] No [X]
E4g	Private Data in Request	P16.8	E4:o		Yes [] No [X]
E4h	Private Data in Result	P16.8	E4:o		Yes [] No [X]
E4i	Report if Service Errors	P14	E4:m	[]	Yes [X]

A.10.5 Snapshot device

Item	Service / Feature	Reference	Status	N/A	Supported?
E4	Snapshot Device service	S10.6 P13.4	o		Yes [X] No []
E4a	Service Result	P5.3 P13.4	E4:m	[]	Yes [X]
E4b	Static Device ID parameter in Result	P13.4	E4a:m	[]	Yes [X]
E4c	Connection ID parameter in Result	P13.4	E4a:m	[]	Yes [X]
E4d	Call State parameter in Result	P13.4	E4a:m	[]	Yes [X]
E4e	Security parameters	P16.8	E4:o		Yes [] No [X]
E4f	Private Data in Request	P16.8	E4:o		Yes [] No [X]
E4g	Private Data in Result	P16.8	E4:o		Yes [] No [X]
E4h	Report if Service Errors	P14	E4:m	[]	Yes [X]

A.11 Switching Event Cause Values

Item	Service / Feature	Reference	Status	N/A	Supported?
F1	Cause values in event reports	S10.2 P15	o		Yes [X] No []
F1a	Active Monitor	P15	F1.o		Yes [X] No []
F1b	Alternate	P15	F1.o		Yes [X] No []
F1c	Busy	P15	F1.o		Yes [X] No []
F1d	Call Back	P15	F1.o		Yes [X] No []
F1e	Call Cancelled	P15	F1.o		Yes [X] No []
F1f	Call Forward Immediate	P15	F1.o		Yes [] No [X]
F1g	Call Forward Busy	P15	F1.o		Yes [] No [X]
F1h	Call Forward No Answer	P15	F1.o		Yes [] No [X]
F1i	Call Forward	P15	F1.o		Yes [X] No []
F1j	Call Not Answered	P15	F1.o		Yes [] No [X]
F1k	Call Pickup	P15	F1.o		Yes [X] No []
F1l	Camp On	P15	F1.o		Yes [X] No []
F1m	Destination Not Obtainable	P15	F1.o		Yes [X] No []
F1n	Do Not Disturb	P15	F1.o		Yes [X] No []
F1o	Incompatible Destination	P15	F1.o		Yes [] No [X]
F1p	Invalid Account Code	P15	F1.o		Yes [] No [X]
F1q	Key Operation	P15	F1.o		Yes [] No [X]
F1r	Lockout	P15	F1.o		Yes [] No [X]
F1s	Maintenance	P15	F1.o		Yes [] No [X]
F1t	Network Congestion	P15	F1.o		Yes [] No [X]
F1u	Network Not Obtainable	P15	F1.o		Yes [] No [X]
F1v	New Call	P15	F1.o		Yes [X] No []
F1w	No Available Agents	P15	F1.o		Yes [X] No []
F1x	Overflow	P15	F1.o		Yes [] No [X]
F1y	Override	P15	F1.o		Yes [] No [X]
F1z	Park	P15	F1.o		Yes [X] No []
F1aa	Recall	P15	F1.o		Yes [X] No []
F1ab	Redirected	P15	F1.o		Yes [X] No []

F1ac	Reorder Tone	P15	F1.o		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
F1xd	Resources Not Available	P15	F1.o		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
F1ae	Silent Monitor	P15	F1.o		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
F1af	Transfer	P15	F1.o		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
F1ag	Trunks Busy	P15	F1.o		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
F1ah	Voice Unit Indicator	P15	F1:o		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

A.12 Switching Function Errors**A.12.1 Operational Errors**

Item	Service / Feature	Reference	Status	N/A	Supported?
G1	Operational Errors category	S8.4 P14	o		Yes [X] No []
G1a	Generic	P14	G1:o		Yes [X] No []
G1b	Request Incompatible with Object	P14	G1:o		Yes [] No [X]
G1c	Value out of Range	P14	G1:o		Yes [] No [X]
G1d	Object Not Known	P14	G1:o		Yes [X] No []
G1e	Invalid Calling Device	P14	G1:o		Yes [X] No []
G1f	Invalid Called Device	P14	G1:o		Yes [X] No []
G1g	Privilege Violation on Specified Device	P14	G1:o		Yes [X] No []
G1h	Invalid Forwarding Destination	P14	G1:o		Yes [] No [X]
G1i	Privilege Violation on Called Device	P14	G1:o		Yes [] No [X]
G1j	Privilege Violation on Calling Device	P14	G1:o		Yes [] No [X]
G1k	Invalid Call Identifier	P14	G1:o		Yes [X] No []
G1l	Invalid Device Identifier	P14	G1:o		Yes [X] No []
G1m	Invalid Connection Identifier	P14	G1:o		Yes [X] No []
G1n	Invalid Destination	P14	G1:o		Yes [] No [X]
G1o	Invalid Feature	P14	G1:o		Yes [X] No []
G1p	Invalid Allocation State	P14	G1:o		Yes [] No [X]
G1q	Invalid Cross Reference ID	P14	G1:o		Yes [X] No []
G1r	Invalid Object Type	P14	G1:o		Yes [] No []
G1s	Security Violation	P14	G1:o		Yes [] No []

A.12.2 State Incompatibility

Item	Service / Feature	Reference	Status	N/A	Supported?
G2	State Incompatibility category	S8.4 P14	o		Yes [X] No []
G2a	Generic	P14	G2:o		Yes [X] No []
G2b	Incorrect Object State	P14	G2:o		Yes [] No [X]
G2c	Invalid Connection ID	P14	G2:o		Yes [] No [X]
G2d	No Active Call	P14	G2:o		Yes [] No [X]
G2e	No Held Call	P14	G2:o		Yes [] No [X]
G2f	No Call to Clear	P14	G2:o		Yes [] No [X]
G2g	No Connection to Clear	P14	G2:o		Yes [] No [X]
G2h	No Call to Answer	P14	G2:o		Yes [] No [X]
G2i	Security Violation	P14	G2:o		Yes [] No [X]

A.12.3 System Resource Availability Errors

Item	Service / Feature	Reference	Status	N/A	Supported?
G3	System Resource Availability Errors category	S8.4 P14	o		Yes [X] No []
G3	Generic	P14	G3:o		Yes [X] No []
G3	Service Busy	P14	G3:o		Yes [] No [X]
G3	Resource Busy	P14	G3:o		Yes [] No [X]
G3	Resource Out of Service	P14	G3:o		Yes [] No [X]
G3	Network Busy	P14	G3:o		Yes [] No [X]
G3	Overall Monitor Limit Exceeded	P14	G3:o		Yes [X] No []
G3h	Conference Member Limit Exceeded	P14	G3:o		Yes [] No [X]

A.12.4 Subscriber Resource Availability Errors

Item	Service / Feature	Reference	Status	N/A	Supported?
G4	Subscriber Resource Availability Errors category	S8.4 P14	o		Yes [] No [X]
G4a	Generic	P14	G4:o		Yes [] No []
G4b	Object Monitor Limit Exceeded	P14	G4:o		Yes [] No []
G4c	External Trunk Limit Exceeded	P14	G4:o		Yes [] No []
G4d	Outstanding Request Limit Exceeded	P14	G4:o		Yes [] No []

A.12.5 Performance Errors

Item	Service / Feature	Reference	Status	N/A	Supported?
G5	Performance Errors category	S8.4 P14	o		Yes [] No [X]
G5a	Generic	P14	G5:o		Yes [] No []
G5b	Performance Limit Exceeded	P14	G5:o		Yes [] No []

A.13 CSTA Data Types

Item	Service / Feature	Reference	Status	N/A	Supported?
H1	Dynamic Device IDs	S8.4 P14	o		Yes [] No [X]
H2	Extended Device IDs (choices follow)	P16.2	m		Yes [X]
H2a	Device Identifier	P16.2	H2:o1		Yes [] No []
H2b	Implicit Public	P16.2	H2:o1		Yes [] No []
H2c	Explicit Public	P16.2	H2:o1		Yes [] No []
H2d	Implicit Private	P16.2	H2:o1		Yes [] No []
H2e	Explicit Private	P16.2	H2:o1		Yes [] No []
H2f	Other plan	P16.2	H2:o1		Yes [] No []
H3	Device IDs (choicesfollow)	P16.2	m	[]	Yes [X]
H3a	Number digits	P16.2	H3:o1		Yes [X] No []
H3b	Device number	P14	H3:o1		Yes [] No [X]

A.14 Security

Item	Service / Feature	Reference	Status	N/A	Supported?
I1	Security option	S7 P16.7	o		Yes [] No [X]
I1a	Message Sequence Number	P16.7	I1:o		Yes [] No []
I1b	Time Stamp	P16.7	I1:o		Yes [] No []
I1c	Privilege Attribute Certificate (PAC)	P16.7	I1:o		Yes [] No []
I1d	Seal	P16.7	I1:o		Yes [] No []